

**Automaatsed sundtõmbega põletid gaaskütustele**  
**KONSOLIDEERITUD TEKST**

Automatic forced draught burners for gaseous fuels  
CONSOÖIDATED TEXT

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 676:2003+A2:2008 sisaldab Euroopa standardi EN 676:2003+A2:2008 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 21.07.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 11.06.2008.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 676:2003+A2:2008 consists of the English text of the European standard EN 676:2003+A2:2008.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 21.07.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 11.06.2008.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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**Võtmesõnad:** andmeplaadid, gaasiseadmed, märgistus, määratlused, ohutusseadmed, põletid, seadmete tehnilised andmed, tehnilised andmed, testid, testimistingimused, tööomaduste hindamine, ventilaatorid

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English Version

**Automatic forced draught burners for gaseous fuels**

Brûleurs automatiques à air soufflé pour combustibles gazeux

Automatische Brenner mit Gebläse für gasförmige Brennstoffe

This European Standard was approved by CEN on 3 April 2003 and includes Amendment 1 approved by CEN on 1 April 2008 and Amendment 2 approved by CEN on 1 April 2008.

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## Foreword

This document (EN 676:2003+A2:2008) has been prepared by Technical Committee CEN/TC 131 "Gas burners using fans", the secretariat of which is held by DIN.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2008 and conflicting national standards shall be withdrawn at the latest by June 2010.

This document includes Amendment 1, approved by CEN on 2008-04-01 and Amendment 2, approved by CEN on 2008-04-01.

This document supersedes  $\boxed{A_2}$  EN 676:2003  $\langle A_2 \rangle$ .

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\langle A_1 \rangle$  and  $\boxed{A_2}$   $\langle A_2 \rangle$ .

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative  $\boxed{A_2}$  Annexes ZB, ZC, ZD and ZE  $\langle A_2 \rangle$ , which are integral parts of this document.

$\boxed{A_1}$  *deleted text*  $\langle A_1 \rangle$

According to edition 1996 the following fundamental changes are given:

- revisions for special applications;
- implementation of NO<sub>x</sub>-classes and forming of arithmetic average values for determining the NO<sub>x</sub>-values;
- implementation of appliance categories for forced draught burners.

$\boxed{A_2}$  Following a request from CEN/TC 131, CEN has agreed to defer the date of withdrawal of EN 676:2003 for a transition period of 2 years.  $\langle A_2 \rangle$

$\boxed{A_2}$  Annexes A, B, C, D, E, F, G, H, I, ZA, ZB, ZC, ZD and ZE are informative.  $\langle A_2 \rangle$

$\boxed{A_1}$  Annexes J and K are normative.  $\langle A_1 \rangle$

This document includes a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## Introduction

This European Standard is primarily intended for automatic forced draught gas burners having a combustion air fan, operated with gaseous fuels, and intended to be marketed as a complete assembly.

EN 437 sets out a system of classification of appliances into categories defined according to the gases and pressures for which they are designed.

Such a system of classification, when applied to forced draught burners, can lead to difficulties in defining the precise category to which a particular burner should be allocated. For example many burners are designed to operate on a wide range of fuel gases with little or no modification other than adjustment of air supply.

The technical committee responsible for the standard decided that the following appliance categories for forced draught burners should apply:

- single categories: I<sub>2R</sub> for natural gas and I<sub>3R</sub> for liquefied petroleum gas;
- dual category: II<sub>2R/3R</sub> for natural and liquefied petroleum gas.

All the burners of this standard marked with these categories are commissioned on site and the measured values are recorded in a commissioning report.

However it should be noted that the Gas Appliance Directive requires the specification of the type of gas and the supply pressure used as well as the burner category.

Forced draught gas burners according to this standard are often used in industrial applications. The safety principles are the same as for forced draught gas burners used for household/commercial applications. Industrial forced draught gas burners however should operate safely in their industrial environment and the risks involved can differ from those for household applications. These industrial forced draught gas burners can be characterized by the ability to withstand industrial environmental influences, like moisture, high temperature, electrical and magnetic phenomena, vibrations, etc.

Principal requirements for installation and construction of gas burners and industrial thermal processing are covered by EN 746-family.

Special requirements for forced draught burners for industrial premises will be given as a note with the addition "Industrial application".

Further information and application limitation for EN 676 forced draught burners which are used for industrial application are given in informative annex I.

**[A1]** This document is a type C standard as stated in EN ISO 12100-1 and EN ISO 12100-2.

The machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standard, for machines that have been designed and built according to the provisions of this type C standard. **[A1]**

## 1 Scope

**[A1]** This European Standard specifies the terminology, the general requirements for the construction and operation of automatic forced draught gas burners and also the provision of control and safety devices, and the test procedure for these burners. **[A1]**

This standard is applicable to

- **[A1]** automatic gas burners with a combustion air fan (hereinafter called "burners") as described in 3.1.2 and gas line components, intended for use in appliances of different types, and that are operated with gaseous fuels; **[A1]**
- total pre-mixed burners and nozzle mixed burners.

The standard is applicable to

- **[A1]** single burners with a single combustion chamber; **[A1]**
- single-fuel and dual-fuel burners when operating only on gas;
- **[A1]** gas function of dual-fuel burners designed to operate simultaneously on gaseous and liquid fuels. **[A1]**

**[A1]** This European Standard deals with all significant machine hazards, hazardous situations and events relevant to burners, when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer, see Annex J.

This European Standard specifies the requirements to be met by the manufacturer to ensure the safety during commissioning, start-up, operation, shut-down and maintenance.

This European Standard does not deal with hazards due to specific applications.

This European Standard is not applicable to automatic forced draught gas burners which are manufactured before the date of its publication as EN. **[A1]**

**[A2]** This European Standard does not apply to burners specifically designed for use in industrial processes carried out on industrial premises.

This European Standard deals also with the additional requirements for the burners in the scope with pressurised parts and /or firing pressurised bodies, see Annex K. **[A2]**

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

**[A2]** EN 88-1, *Pressure regulators and associated safety devices for gas appliances — Part 1: Pressure regulators for inlet pressures up to and including 500 mbar*

EN 88-2 *Pressure regulators and associated safety devices for gas appliances — Part 2: Pressure regulators for inlet pressures above 500 mbar up to and including 5 bar* **[A2]**

EN 161, *Automatic shut-off valves for gas burners and gas appliances*

EN 267, *Forced draught oil burners — Definitions, requirements, testing, marking*



EN 294, *Safety of machinery — Safety distance to prevent danger zones from being reached by the upper limbs* <sup>A1</sup>

EN 298, *Automatic gas burner control systems for gas burners and gas burning appliances with or without fans*

EN 334, *Gas pressure regulators for inlet pressures up to 100 bar*

EN 953, *Safety of machinery — Guards - General requirements for the design and construction of fixed and movable guards*

EN 1088:1995, *Safety of machinery — Interlocking devices associated with guards — Principles for design and selection* <sup>A1</sup>

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 1092-2, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 2: Cast iron flanges*

EN 1092-3 <sup>A1</sup>, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 3: Copper alloy flanges*

EN 1643, *Valve proving systems for automatic shut-off valves for gas burners and gas appliances*

EN 1854, *Pressure sensing devices for gas burners and gas burning appliances*

EN 10204, *Metallic products — Types of inspection documents* <sup>A2</sup>

EN 10208-1, *Steel pipes for pipelines for combustible fluids — Technical delivery conditions — Part 1: Pipes of requirement class A*

EN 10208-2, *Steel pipes for pipelines for combustible fluids — Technical delivery conditions — Part 2: Pipes of requirement class B*

EN 10216-1, *Seamless steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 10217-1, *Welded steel tubes for pressure purposes — Technical delivery conditions — Part 1: Non-alloy steel tubes with specified room temperature properties*

EN 12067-1, *Gas/air ratio controls for gas burners and gas burning appliances — Part 1: Pneumatic types*

EN 12067-2 <sup>A1</sup>, *Gas/air ratio controls for gas burners and gas burning appliances — Part 2: Electronic types*

EN 15036-1:2006, *Heating boilers — Test regulations for airborne noise emissions from heat generators — Part 1: Airborne noise emissions from heat generators* <sup>A1</sup>

EN 50156-1:2004, *Electrical equipment for furnaces and ancillary equipment — Part 1: Requirements for application design and installation* <sup>A2</sup>

<sup>A1</sup> *deleted text* <sup>A1</sup>

EN 60335-2-102:2007, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections (IEC 60335-2-102:2004, modified)* <sup>A1</sup>

EN 60529, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

<sup>A1</sup> *deleted text* <sup>A1</sup>

EN 60730-1, *Automatic electrical controls for household and similar use — Part 1: General requirements* (IEC 60730-1:1999, modified + A1:2003, modified)

EN 61310-1, *Safety of machinery — Indication, marking and actuating — Part 1: Requirements for visual, auditory and tactile signals* (IEC 61310-1:1995 + Corrigendum 1995) (A1)

EN 10220 (A1), *Seamless and welded steel tubes — Dimensions and masses per unit length*

EN ISO 228-1 (A1), *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation* (ISO 228-1:2000)

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes* (A1) (ISO 3166-1:2006) (A1)

EN ISO 4871, *Acoustics — Declaration and verification of noise emission values of machinery and equipment* (ISO 4871:1996) (A1)

EN ISO 9606-2, *Qualification test of welders — Fusion welding — Part 2: Aluminium and aluminium alloys* (ISO 9606-2:2004)

EN ISO 9606-3, *Approval testing of welders — Fusion welding — Part 3: Copper and copper alloys* (ISO 9606-3:1999)

EN ISO 9606-4, *Approval testing of welders — Fusion welding — Part 4: Nickel and nickel alloys* (ISO 9606-4:1999)

EN ISO 9606-5, *Approval testing of welders — Fusion welding — Part 5: Titanium and titanium alloys, zirconium and zirconium alloys* (ISO 9606-5:2000) (A2)

EN ISO 12100-1, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology* (ISO 12100-1:2003)

EN ISO 12100-2:2003, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles* (ISO 12100-2:2003)

EN ISO 13849-1, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design* (ISO 13849-1:2006) (A1)

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 1: Arc welding* (ISO 15609-1:2004)

EN ISO 15609-2, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 2: Gas welding* (ISO 15609-2:2001)

EN ISO 15609-3, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 3: Electron beam welding* (ISO 15609-3:2004)

EN ISO 15609-4, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 4: Laser beam welding* (ISO 15609-4:2004)

EN ISO 15609-5, *Specification and qualification of welding procedures for metallic materials — Welding procedure specification — Part 5: Resistance welding* (ISO 15609-5:2004)

EN ISO 15612, *Specification and qualification of welding procedures for metallic materials — Qualification by adoption of a standard welding procedure* (ISO 15612:2004)

EN ISO 15614-7, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 7: Overlay welding* (ISO 15614-7:2007)

EN ISO 15614-11, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 11: Electron and laser beam welding* (ISO 15614-11:2002) (A2)

ISO 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

### 3 Terms and definitions

<sup>[A1]</sup> For the purposes of this document, the terms and definitions given in EN ISO 12100-1 and the following apply. <sup>[A1]</sup>

#### 3.1 General terms and definitions

##### 3.1.1

##### **forced draught burner**

burner in which the total air for combustion is supplied by means of a fan

##### 3.1.2

##### **automatic forced draught burner**

burner that is fitted with an automatic ignition, flame monitoring and burner control devices. Ignition, flame monitoring and the on/off switching of the burner occur automatically. The heat input of the burner can be adjusted during operation either automatically or manually

##### 3.1.3

##### **dual-fuel burner**

burner in which both gaseous and liquid fuels can be burnt either simultaneously or in succession

##### 3.1.4

##### **total pre-mixed burner**

burner in which part, or all, of the air for complete combustion of the gas is mixed with the gas upstream of the mixture outlet ports

##### 3.1.5

##### **nozzle mixed burner**

burner in which part, or all, of the air required for combustion of the gas is mixed with the gas at, or downstream of, the air and gas ports

##### 3.1.6

##### **integrated ignition burner**

burner with direct main ignition burner at reduced rate with by-pass start gas supply

##### 3.1.7

##### **start gas rate**

gas rate ignited by the ignition device during the start-up of the burner

##### 3.1.8

##### **industrial applications**

industrial applications means:

- the extraction,
- growth,
- refining,
- processing,
- production,
- manufacture or
- preparation